PATENT COOPERATION TREATY

# PCT



## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

| Applicant's or agent's file reference | FOR FURTHER ACTION See Form PCT/IPEA/416 | |
|---|---|---|
| O:159389 LS/kmg | | |
| International application No. | International filing date *(day/month/year)* | Priority date *(day/month/year)* |
| PCT/NO2004/000327 | 27.10.2004 | 28.10.2003 |
| International Patent Classification (IPC) or national classification and IPC | | |
| B63B 35/42 | | |
| Applicant | | |
| Delta Lifter Technologies AS et al | | |

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *(sent to the applicant and to the International Bureau)* a total of 3 sheets, as follows:
      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))
      _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
   - ☒ Box No. I Basis of the report
   - ☐ Box No. II Priority
   - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - ☐ Box No. IV Lack of unity of invention
   - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - ☐ Box No. VI Certain documents cited
   - ☐ Box No. VII Certain defects in the international application
   - ☐ Box No. VIII Certain observations on the international application

| Date of submission of the demand | Date of completion of this report |
|---|---|
| 26.08.2005 | 03.11.2005 |
| Name and mailing address of the IPEA/SE<br>Patent- och registreringsverket<br>Box 5055<br>S-102 42 STOCKHOLM<br>Facsimile No. +46 8 667 72 88 | Authorized officer<br><br>Carl Fröderberg / JA A<br>Telephone No. +46 8 782 25 00 |

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/NO2004/000327

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on:

☒ the international application in the language in which it was filed

☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of:

- ☐ international search (Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (Rule 12.4(a))
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

☐ the international application as originally filed/furnished

☒ the description:

pages 1-7 as originally filed/furnished
pages* _____ received by this Authority on _____
pages* _____ received by this Authority on _____

☒ the claims:

pages _____ as originally filed/furnished
pages* _____ as amended (together with any statement) under Article 19
pages* 1-3 received by this Authority on 2005-08-26
pages* _____ received by this Authority on _____

☒ the drawings:

pages 1-5 as originally filed/furnished
pages* _____ received by this Authority on _____
pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing *(specify)*: _____
- ☐ any table(s) related to the sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing *(specify)*: _____
- ☐ any table(s) related to the sequence listing *(specify)*: _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/NO2004/000327

**Box No. V** **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

| | | | |
|---|---|---|---|
| Novelty (N) | Claims | 1-10 | YES |
| | Claims | | NO |
| Inventive step (IS) | Claims | 1-10 | YES |
| | Claims | | NO |
| Industrial applicability (IA) | Claims | 1-10 | YES |
| | Claims | | NO |

2. Citations and explanations (Rule 70.7)

Documents cited in the International Search Report:

D1: US 3859804
D2: US 6540441
D3: US 3347052
D4: US 5111764

The invention relates to a method and a vessel for removing an offshore jacket structure. The invention according to claim 5 has been restricted by the amended fifth claim filed with the letter of 2005-08-26. Particularly by adding to claim 5 that the seagoing vessel (1) is constructed for removing, installing and transporting an offshore jacket structure. This, in combination with the two protruding auxiliary buoyancy sections (3), makes it unobvious to a person skilled in the art to modify the transport and launch apparatus to transport and launch an offshore tower described in D1 in such a way that the claimed invention according to the amended fifth claim is obtained.

The cited documents represent the general state of the art and the invention defined in amended claims 1- 10 is not disclosed by any of these documents.

Accordingly, the invention defined in the amended claims 1- 10 is novel and is considered to involve an inventive step. The invention is industrially applicable.

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C l a i m s

1. A method for removing an offshore jacket structure (15) standing on the seabed (16) in a body of water, said method comprising the steps of:

(a) providing a ballastable vessel (1) having a generally float-like main buoyancy section (2) being generally horizontal in the normal floating condition of the vessel (1)
and having two auxiliary buoyancy sections (3) located above and on either side of the main buoyancy section (2) in said normal floating condition,

(b) bringing said vessel (1) into the vicinity of the jacket structure (15),

(c) ballasting the vessel (1) so as to rotate the main section (2) to an approximately vertical condition and bringing the main section into contact with the jacket structure (15), the auxiliary buoyancy sections (3) now being located on opposite sides of the jacket structure,

(d) securing the vessel (1) to the jacket structure (15) and de-ballasting the vessel so as to raise the vessel with the jacket structure to the water surface (17) while rotating the main section back to the generally horizontal position,

c h a r a c t e r i s e d i n that in step (c) the main section is at first rotated less than 90° from the horizontal, next it is lowered so that its lower end (11) rests on the seabed (16) adjacent to the jacket structure (15), and whereupon it is rotated beyond 90° into contact with the jacket structure (15) while its lower end (11) is in contact, preferably in substantially rolling contact with the seabed (16).

2. A method according to claim 1,
c h a r a c t e r i s e d i n that in step (d), before raising the vessel with the jacket structure, the auxiliary sections (3) are de-ballasted in order to rotate the vessel (1) with the jacket structure (15) while the lower end (11)

seabed until the main section (2) of the vessel forms an angle with the sea surface (17) of 30° - 70°, preferably about 60°.

3. A method according to claim 1 or 2, characterised by using a vessel (1) having in plan view substantially the shape of a delta with an extension (4, 5) at the apex, the extension forming the fore part of the vessel and the base (8, 9) of the delta forming the aft part, the auxiliary buoyancy sections (3) being located at the ends (8) of the base.

4. A method according to any one of the preceding claims, characterised by providing the vessel (1) with heavy permanent ballast (12) in the aft part, preferably in the lower parts (8) of the auxiliary buoyancy sections (3).

5. A seagoing vessel (1) for removing and installing and transporting an offshore jacket structure (15), said vessel comprising a ballastable main buoyancy section (2) and two auxiliary buoyancy sections (3) protruding in the same direction on either side of the main section, characterised in that the main buoyancy section (2) is generally planar and has in plan view substantially the outline of an isosceles triangle with an extension at the apex, said extension (4, 5) forming the fore part of the vessel (1) and the base (8, 9) of the triangle forming the aft part, the auxiliary sections (3) being located at the ends (8) of said base.

6. A vessel according to claim 5, characterised in that a transverse buoyancy section (9) is bridging the gap between the auxiliary buoyancy sections (3), each auxiliary buoyancy section (3) comprising a single column.

7. A vessel according to claim 5 or 6, c h a r a c t e r i s e d i n that at least the main section (2) of the vessel is made from stiffened flat steel plates.

8. A vessel according to claim 5, 6 or 7, c h a r a c t e r i s e d i n that it is provided with heavy permanent or semi-permanent ballast (12) in the aft part, preferably in the lower parts (8) of the auxiliary buoyancy sections (3).

9. A vessel according to any one of claims 6-8, c h a r a c t e r i s e d i n that it has a pump room (10) in the transverse buoyancy section (9) and a control room (5) in the fore part.

10. A vessel according to any one of claims 5-9, c h a r a c t e r i s e d i n that it has external surfaces, preferably rounded surfaces (11), at the lower ends of the auxiliary buoyancy sections (3, 8) configurated to permit the vessel, when in use, to pivot towards or away from said jacket structure (15) while in contact with the seabed (16).